INCIDENT: OTCW Oil to Lake Michigan

LOCATION: Whiting Refinery Lakefront, IN
SUBJECT: FINAL Oiled Shoreline Assessment (SCAT) Report
DATE: 8th April 2014

This report is the final in the series that have been submitted as part of the shoreline response program and includes a summary of activities, observations and recommendations through 08 April, 2014.

Report Contents:

1. Summary of SCAT Activities

- SCAT surveys were conducted on 26th, 27th, 28th, and 30th March (see segment map below and Daily SCAT Reports).
- The follow-up SCAT survey of shoreline segments D, E and F scheduled for 3rd April was cancelled due to a safety issue (lightning) and took place on 4th April.
- A sunken oil survey plan was agreed (Attachment A) and the survey on 30th March resulted in NOO (No Observed Oil) and NO (No Observed) Sheen reports at all 36 lake bottom sites in the nearshore adjacent to segments D, E and F (Attachment B).
- BP will continue to perform periodic walkthroughs in segment F until the SCAT team performs a planned summer walkthrough.

2. Shoreline Segment Map

3. Oiling Observations Summary

SEGMENT	SHORE TYPE - LENGTH	OBSERVED OILING
A	Coarse grain sand/gravel 500 m (rip rap not included)	28th March: NOO
D	Rip Rap 210 m	26th: one 1 m sq. patch of 1-10% tar balls, average 1-3 cm size, < 1 cm thick 27th: oiled band now visible with low water levels on the length of the segment, 0.1 to 1.5 m wide, CT and 10-15% distribution 4th April: observed oil met cleanup end point of < 1% CT in a < 3 feet band width and no sheens observed
E	Sand, some shell hash 750 m	26th: <1% tar balls, average 0.5 to 1.0 cm size, < 1 cm thick 27th: no change 30th: no change 4th April: NOO
F	Pebble-cobble (frozen) 650 m	26th: 1 tar ball per meter length, average 1-3 cm size, < 1 cm thick 27th: < 1% oil/pebble conglomerates now visible, typically 2-5 cm CT decreasing to north 30th: no change 4th April: Observed oil was < 1% ST/CT. Cleanup will continue until shredded sorbent and the large tar balls/patties are removed. This was completed by 8th April (*see below*) at which point the segment met the cleanup end point < 1% CT in a < 3 feet band width.
G	Rip Rap 1500 m	26th March (by boat): NOO

NOTE: The oiling observations were agreed in the field by the Survey Team and documented in the Daily SCAT Reports. No Shoreline Oiling Summary (SOS) forms were completed due to the small size of the area involved.

SURVEY TEAM on 04 April 2014:

Name:	Organization:
Jim Wallace	BP
Jeremy Thomas	USCG
Stacey Miller	USCG
Beverly Kush	EPA
Verneta Simon	EPA

The observations of the inspection on the 4th are summarized in this report. On 8th April BP communicated this message to OCC as a follow up to that survey:

> *Per our discussion today, BP completed clean up actions following the SCAT walkthrough performed on Friday, April 4.*
>
> *On Friday, in Section F, the SCAT team noticed a few oil globules which were pointed out to our clean up contractor – Heritage. Heritage has since cleaned up those specific globules and we can now close out the clean-up actions and issue the draft final report.*
>
> *As agreed by the SCAT team, we will plan to have the SCAT team perform a walk through for Sections D & F in the summer/warmer weather to ensure that natural weathering of the oil residue has taken place as anticipated. This is yet to be scheduled.*
>
> *Out of the abundance of caution, BP continues to perform periodic walkthroughs on Section F. We will continue this until the SCAT team performs the summer walkthrough.*

SEGMENT A

- 28th March: NOO

SEGMENT D

- 26th March: An area approximately 1 m square of 1-10% distribution of tar balls was observed at the most southern end of the rip rap at the junction with the sand beach of Segment E. The oil was a semi solid, shiny black COVER/COAT (CV/CT) of 1-3 cm size tar balls. (COVER = 0.1-1.0 cm thick: COAT = <0.1 cm thick)
- 27th March: oiled band exposed by (wind-induced) lower water level along the segment varied 0.1 to 1.5 m wide, CT and 10-15% distribution: one small patch of silver sheen observed otherwise oil appeared stable and unlikely to be remobilized. Note: the rip rap materials are very light in color which facilitated observations of oil present on the outer rip rap surfaces.
- 30thMarch: no change
- 4th April: no change other than change from CT/CV to CV/ST: to observed oil <1% CT/ST and 1-3 feet band width and no sheens observed: observed oil met cleanup end point of criteria <1% CT in a < 3 feet band width

SEGMENT E

- 26th March: Surface oil was observed at less than a 1% distribution of tar balls, the majority of which were 0.5-1.0 cm diameter with a maximum of 5 cm size
- Similar low concentrations were observed in two small areas (several meters long) of shell hash.
- Many “false positives” were observed that included coal, wood, shell and vegetation.
- The fine sand size and the hard, frozen nature of the beach would not have been conducive to penetration or burial
- 27th March: no change < 1%
- 30h March: no change < 1%
- 4th April: NOO

SEGMENT F

- 26th March: Surface oil tar balls were observed at a frequency of 1 per 1-m length (distribution <1%) on the pebble-cobble sediments. These tar balls were typically COAT thickness and in the 1-3 cm size range with an observed maximum of 10 cm.
- The pebble-cobble sediments were frozen with wave swash/spray so no penetration was likely.
- 27th March: ground survey observed < 1% oil/pebble conglomerates typically 2-5 cm (one large 20cm size) typically CT, distribution decreased to north. Oiled boom was removed.
- 30thMarch: no change
- 4th April: shredded sorbent boom had stranded and adhered to oil: crews had not cleaned areas that had been under water during the period since the last survey. Observed oil was < 1% ST/CT. No sheen was observed
- Cleanup will continue until the sorbent is removed and the large tar balls/patties are removed. This was completed by 8th April (*see message above*) at which point the segment met the cleanup end point of <1% CT in a < 3 feet band width

SEGMENT G

- 26th March: surveyed by boat. NOO on rip rap material. Note: the rip rap materials are very light in color which facilitated observations had any oil been present on the outer surfaces of the rip rap.

4. Shoreline Treatment Recommendations

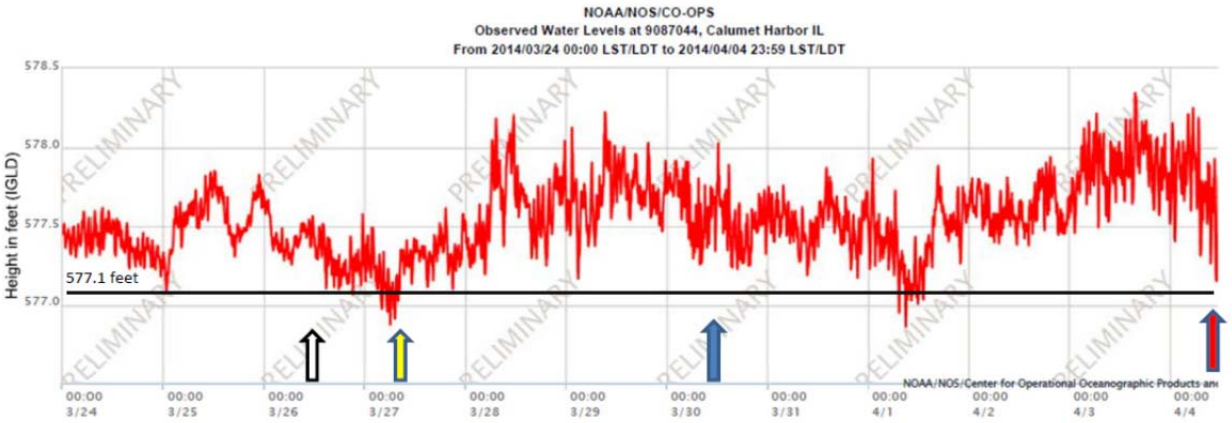
- Treatment Recommendations were presented in the Daily SCAT Reports.
- Water levels were low during the survey on 4th April and oil not previously seen or collectable by the cleanup crews were observed and being removed by the crews.
- The result of the 4th April SCAT survey was the recommendation of NFT (No Further Treatment) for Segments D and E. In Segment F cleanup was required to remove the stranded sorbent and large tar balls/patties. This was completed by 8th April after which the segment met the cleanup end point NFT recommendation.

5. Future Activities

- A survey will be planned for segments D, E, and F in the summer to ensure that the natural weathering of the oil residues has taken place as anticipated. The timing of this survey will be decided by discussion between USCG, EPA and BP.
- BP will continue to perform periodic walkthroughs in segment F until the SCAT team performs the summer walkthrough.

6. Lake Water Levels, Oil Observations and Cleanup

- The lake level in the area steadily fell between 16:00 and 23:30 on the 24th to a low level of 577.1 feet (solid line on the observed water level graph for Calumet Harbor IL).
- Except for two brief periods (the morning of the 27th March and morning of the 1st April), water levels have been higher than during that period when the oil likely was initially stranded.
- Detection and cleanup of stranded oil was dependent on water levels at the time of the survey or the work and for many periods oil that was deposited during that initial period could not be observed and/or removed.
    - At the time of the first SCAT survey in the 26th the water levels were on the order of 0.4 higher than the low point of 577.1 on the evening of the 24th (white arrow on graph)
    - At the time of the second survey on the 27th water levels were lower than that earlier low point (yellow arrow)
    - At the time of the SCAT survey on the 30th water levels were again higher than that earlier low point (red arrow)



Date	Local Time	Water Level (feet)	Change vs. 24th @ 23:30
24 March	16:00	577.4	+ 0.3
24 March	23.30	577.1	0
26 March	12:00	577.5	+ 0.4
27 March	07:00	576.9	- 0.2
28 March	11:00	578.1	+ 1.0
30 March *	12:00	577.6	+ 0.5
1 April	08:00	577.0	- 0.1
3 April	18:00	578.2	+ 1.2
4 April	10:54	577.2	+ 0.1

NOTE: The blue arrow on the graph indicates the timing of the nearshore sunken oil survey on 30th March (*). The other colored arrows indicate the approximate times of ground observations on the 26th, 27th, and 4th described in the text.

- Lake Michigan water levels typically rise from March through to a maximum in August due to snow melt and runoff, based on long-term data (see NOTE below).
    - As the oil was deposited at a time of a relatively low lake level, both seasonally and within the short-term time frame, the expectation, therefore, is that the oil residues will be within the zone of wave action over the forthcoming 5-6 month period.
    - It is not unreasonable to expect that the oil residues will continue to be degraded and removed by natural weathering over that period.

NOTE:
The latest 6-month water-level forecast for Lake Michigan is given at:
http://www.lre.usace.army.mil/Portals/69/docs/GreatLakesInfo/docs/WaterLevels/MBOGLWL-mich_hrn2.pdf

Acronyms

CT	>0.01 and <0.1 cm thick
CV	>0.1 and <1.0 cm thick
GPS	Global Positioning System
NFT	No Further Treatment
NOO	No Observed Oil
SCAT	Shoreline Cleanup Assessment Technique
SOS	Shoreline Oiling Summary (form)
ST	<0.01 cm thick

Attachments

INCIDENT: OTCW Oil to Lake Michigan

SUBJECT: ATTACHMENT A: Sunken Oil Survey Plan – Version 4, 29-03-2014

Objective:

- Determine the presence or absence of sunken oil in spill area (cove adjacent to Segments D, E and F).

Strategy:

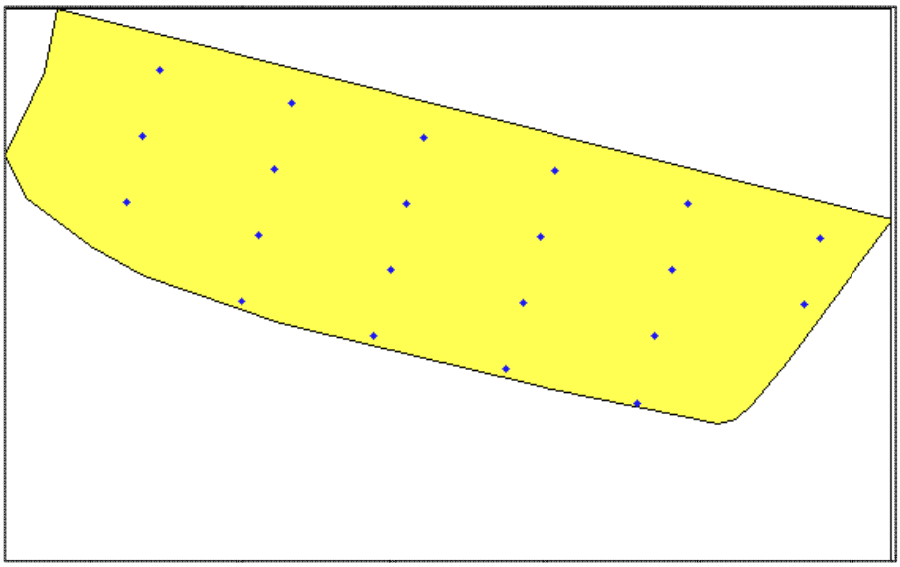
- The presence (or absence) of submerged oil would be determined using two teams: one working from the shoreline using waders and one working offshore from a boat.
- Each team would have representatives from EPA, USCG and BP.
- Presence (or absence) of oil would be determined by dropping absorbents attached to a pole at the bottom of the lake. The team would evaluate presence/absence of oil once absorbents are brought back to the surface.

Methodology:

- Team members will ensure that absorbents are in contact with surface sediments at the bottom of the lake for at least 30 seconds. The pole will also be agitated in order to disturb sediments.
- The pole with absorbents will be brought to surface immediately after for evaluation of presence (or absence) of oil by team members. In the event oil is released, teams will have absorbent pads to recover oil if necessary.
- Information collected by the team for each sampling point will be the following:
    - Coordinates (using GPS)
    - Water depth
    - Sediment type
    - Temperature
    - Time
- Team members will evaluate the presence of oil visually. The following will be considered an indication of the presence of oil at the survey point:
    - Dark stains or cover on absorbent
    - One team member will use viewing tube/underwater camera to confirm contact of pole with lakebed. Sediment type will be recorded based on this observation;
    - Appearance of sheen, oil droplets or tar balls on the water surface assediments are disturbed.
    - Oiling conditions on absorbents or on water surface will be described using standard SCAT terminology (appearance, sheen percentage over $1m^2$ and number of oil globules).
- In the event that absorbents become oiled (confirming the presence of submerged oil), oiled absorbents will be placed in a bag and introduced into a chain of custody for fingerprinting analysis. Split samples will be provided for regulatory agencies.
- In the event that any sheen, oil droplets or tar balls are observed, the location of the survey point will be specifically recorded.
- The Environmental Unit Leader will be informed of the situation and a specific plan would be developed, agreed upon by all stakeholders, and executed.

Survey Grid:

- 21 locations will be surveyed in order to provide a 95% confidence level (as per calculations from “Visual Sampling Plan” software).
- Survey points will be located approximately every 50m along 7 transects 100m apart.
- Team members can also decide to sample additional locations according to field observations such as a change of coloration in sediments, change in sediment type, etc.



INCIDENT: OTCW Oil to Lake Michigan

SUBJECT: ATTACHMENT B – Sunken Oil Survey Report
DATE: 30th March 2014

SURVEY TEAM:

Name:	Organization:
Stephane Grenon	BP-OCC
Jeremy Thomas	USCG
Anne-Marie Borowski	USCG
Beverly Kush	EPA
Verneta Simon	EPA
Sean Kane	EPA-START

Summary of SCAT activities:

- SCAT conducted a sunken oil survey according to the agreed Sunken Oil Survey Plan.
- Weather was clear and wave conditions were appropriate for the observation of sheen on the water surface.
- Profile lines were established on the beach with two large flags to maintain positioning: actual locations were documented by GPS waypoints (see map below)
- ***No oil or sheen was observed at any of the 36 survey sites.***

Map showing positions of the 36 sunken oil survey sites

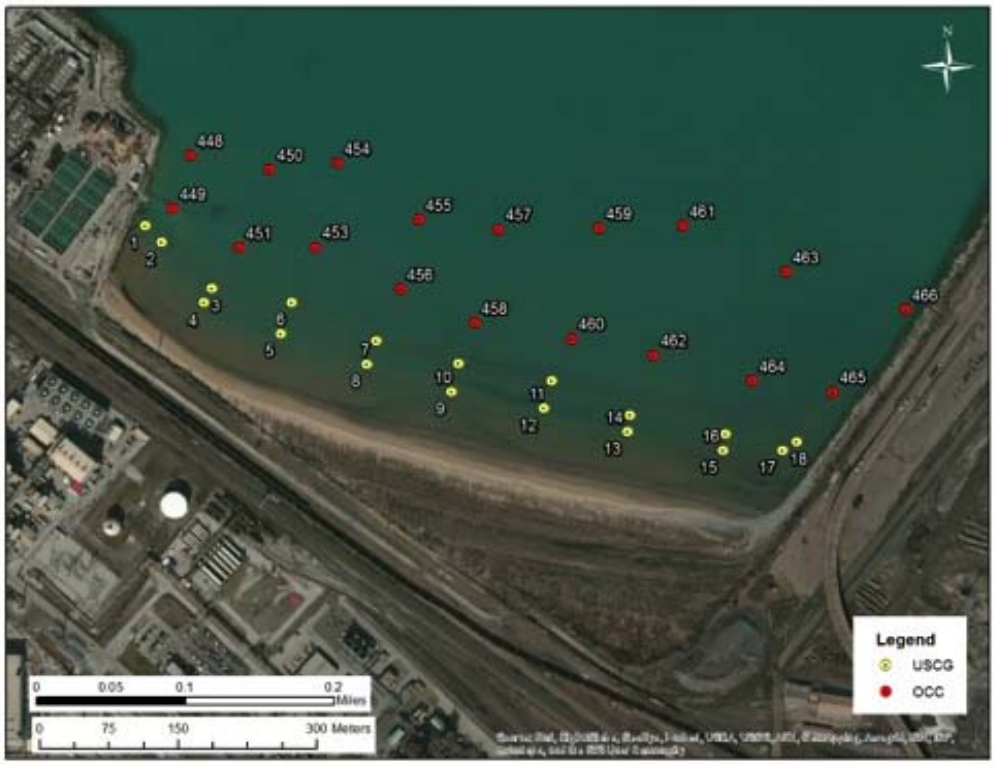


Photo:

Clean absorbent at sunken oil survey point

Data Sunken Oil Survey (30-03-2014)						
Waypoint	**Time**	**Water Depth (feet)**	**Substrate Type**	**Water Temp. (°F)**	**Oil (Y or N)**	**Sheen (Y or N)**
1	11:08	2.7	sand	59	N	N
2	11:12	3.6	sand	59	N	N
3	11:17	3.5	sand	60	N	N
4	11:18	1.7	sand	61	N	N
5	11:24	1.8	sand	59	N	N
6	11:26	3.5	sand	57	N	N
7	11:31	3.5	sand	57	N	N
8	11:33	2.7	sand	57	N	N
9	11:37	2.2	sand	57	N	N
10	11:39	3.1	sand	57	N	N
11	11:44	3.3	sand	55	N	N
12	11:46	2.3	sand	55	N	N

13	11:49	2.1	sand	51	N	N
14	11:51	4	sand	51	N	N
15	11:55	2.6	sand	52	N	N
16	11:57	3.2	sand	52	N	N
17	12:01	2.7	sand	52	N	N
18	12:04	3.2	sand	51	N	N
448		5.7	sand	35	N	N
449	11:17	3.8	sand	35	N	N
450	11:20	6.8	sand	35	N	N
451	11:24	4.7	sand	36	N	N
453	11:28	5.2	sand	39	N	N
454	11:30	8	sand	38	N	N
455	11:32	7	sand	37	N	N
456	11:34	5	sand	37	N	N
457	11:36	7.4	sand	38	N	N
458	11:40	4	sand	43	N	N
459	11:41	8	sand	43	N	N
460	11:45	4	sand	48	N	N
461	11:47	8.5	sand	48	N	N
462	11:51	4	sand	50	N	N
463	11:54	8	sand	48	N	N
464	11:58	4.5	sand	51	N	N
465	11:59	4.5	sand	51	N	N
466	12:03	7	sand	51	N	N

Sites at Waypoints 1 through 18 (red dots) were surveyed by wading.
Sites at Waypoints 448 through 466 (yellow dots) were surveyed by boat.